

Attorney Docket No. SIC-03-024

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of:

KOUJI OOHARA

Appeal No. 2009-007794

Application No.: 10/604,813

Filed: August 19, 2003

For: POWER STABILIZING APPARATUS  
FOR A BICYCLE ELECTRICAL  
COMPONENT

Examiner: Dru M. Parries

Art Unit: 2836

REQUEST FOR REHEARING  
37 C.F.R. §41.52

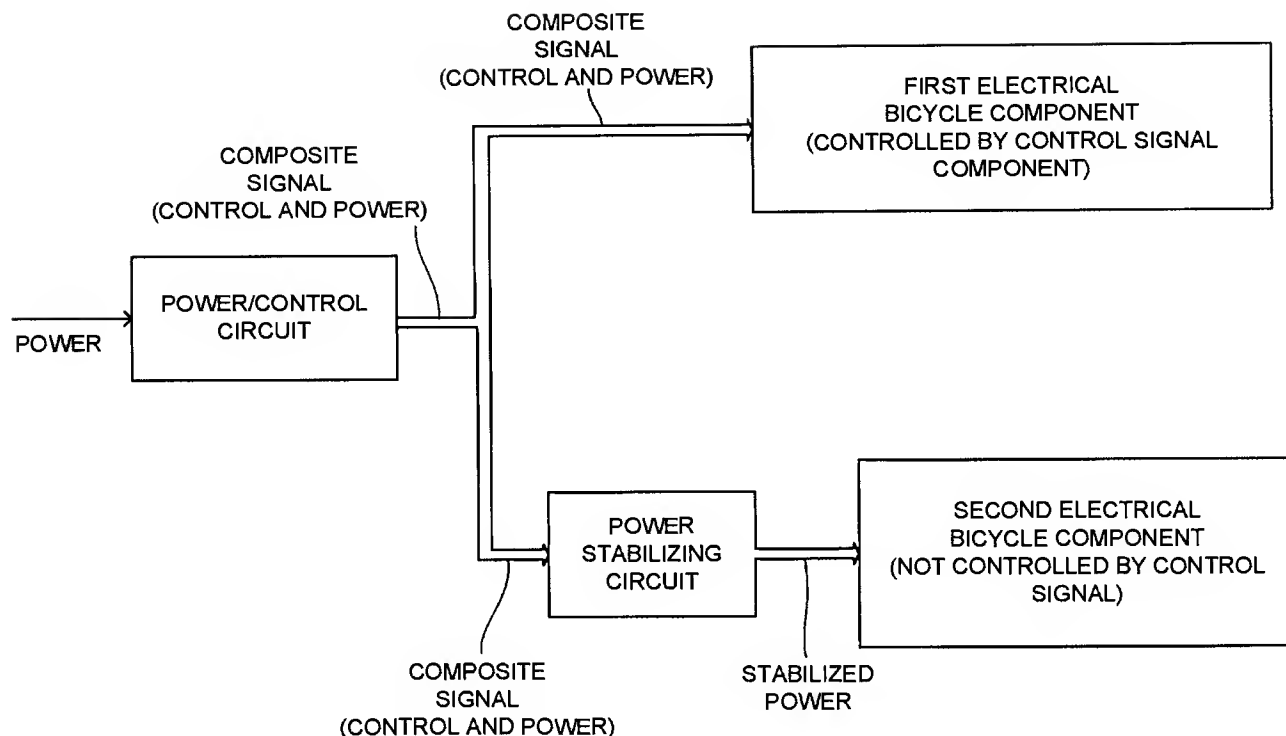
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Commissioner:

This is a request for rehearing of the Board's Decision dated June 11, 2010.

**CLAIM 28**

For the convenience of the Board, the following is a block diagram of the subject matter of claim 28:



## **I. Providing a CPU and a composite signal to Spencer, et al's shifter motor (29)**

### **A. CPU**

On page 8, lines 22-24 of the Board's opinion, the Board states that "it has not been shown that combining Spencer with the APA would require any additional CPUs." To support this conclusion, the Board states at page 7, lines 14-16, when referring to Spencer, et al, that "[b]ecause the shifter motor 29 is capable of receiving a signal from the controller 21, the shifter motor 29 implicitly contains a CPU." Similarly, at page 8, lines 18-20, the Board states "Spencer's shifter motor 29 implicitly teaches a CPU for receiving control signals from the controller 21."

The point misapprehended or overlooked was made to the Board in the second full paragraph at page 4 of Appellant's Appeal Brief wherein it was stated that "Spencer, et al's gear shift driving component (29) does *not* have a CPU. The detailed structure of gear shift driving component (29) is shown in Fig. 13A, and it is clear that gear shift driving component (29) does not have a CPU."

As stated at col. 8:21-22 of Spencer, et al, Figs 10-15 show schematic block diagrams of controller (20) (shown in Fig. 2). As stated at col. 8:31-33, Fig. 13A shows a schematic diagram for

a motor drive circuit portion (130) (of controller (20)). One of ordinary skill in the art will readily recognize that Fig. 13A is a detailed schematic of shifter motor (29). As stated at col. 7:2-5, shifter motor (29) is coupled to rear derailleur (17) (Fig. 1) and is responsive to a shift control signal by moving derailleur (17) for repositioning chain (14) with respect to the plurality of gears of gear set (18).

Fig. 13A shows the two signal inputs MOTOR0 and MOTOR1 that are used to control a motor (H1). The schematic symbol at (H1) designates a motor, not a CPU. As shown in Fig. 10, signals MOTOR0 and MOTOR1 are output by a bus driver (104) which, in turn, receives the signals from microprocessor (CPU) (101). As stated at col. 8:24-25, microprocessor (101) corresponds to controller (21) of Fig. 2. One of ordinary skill in the art knows that microprocessor (101) comprises a CPU, for it is the element that contains the circuits required to interpret and execute the software instructions.

As shown in Fig. 13A, the complete shifter motor circuit (29) comprises motor (H1), resistors (R9, R10, R11), non-polarized capacitors (C5, C6, C7, C8), two unlabeled electrolytic capacitors connected in parallel with the inputs to motor (H1), and two operational amplifiers (U8, U9). Resistors (R9, R10, R11) do not comprise a CPU, and neither do capacitors (C5, C6, C7, C8) or the two electrolytic capacitors. The triangular symbols at (U8, U9) represent operational amplifiers, not CPU's. Operational amplifiers (U8, U9) are simple analog circuit elements that provide the analog drive signals to motor (H1) in response to the MOTOR0 and MOTOR1 signals. Motor (H1) rotates in one direction when MOTOR0 is at a high voltage and MOTOR1 is at a low voltage. Conversely, motor (H1) rotates in the opposite direction when MOTOR0 is at a low voltage and MOTOR1 is at a high voltage. Thus, none of the components depicted in the complete schematic shown in Fig. 13A could reasonably be called a CPU. None of the circuits are capable of interpreting and executing software instructions.

Thus, it is submitted that the Appellant has factually established that combining Spencer, et al with the APA would impose an increased cost of an additional CPU, since Spencer, et al's shifter motor circuit (29) (first electrical bicycle component) does not already have one as alleged by the Board.

**B. Saving wires**

At page 8, line 24 through page 9, line 5 of the Board's opinion, the Board states that, even if the Appellant is correct that the combination of Spencer, et al with the APA would result in additional expense, the combination would have been obvious because a person of ordinary skill in the art would recognize that the APA's composite signal would reduce the number of wires between electrical components. However, as stated in Appellant's Brief at page 5, lines 5-7, any benefits of reducing wires must be balanced against the additional cost of providing a CPU for each component plus the additional cost of the manpower to program each CPU to decode the composite signal and extract the relevant control signals. As shown in Fig. 13A, Spencer, et al's shifter motor (29) has at most three input wires: control wire MOTOR0, control wire MOTOR1 and positive power voltage V<sub>CC</sub>. The ground potential GND, typically supplied by the negative terminal of the battery, is a local potential that is not supplied by separate wires between the components. The negative terminal of the battery is connected to the bicycle frame, and all of the components receive the ground potential by virtue of their attachment to the bicycle frame. This conventional scheme can be verified by looking at the connection of an ordinary automobile battery. While the positive power signal is communicated individually to the various electrical components, the negative terminal of the battery is simply connected to the engine block (quite common) or to the vehicle frame. The signal then is propagated through all of the metal components of the vehicle and is picked up by the electrical components at or near the point of attachment of the individual components.

Thus, in the Spencer, et al system, there would be a maximum saving of two wires between controller (21) and shifter motor (29) if the three signals were communicated on a single line. This must be compared with the additional complexity resulting from the addition of a microprocessor, an example of which is microprocessor (101) (Fig. 10), and a decoder upstream of microprocessor (101) to separate the power and control signals and to provide the appropriate signals to the proper input pins on microprocessor (101). One of ordinary skill in the art knows very well that the cost of a CPU and a decoder (not to mention the cost of programming) is far greater than the cost of two wires. It is believed that Spencer, et al's Figs. 10 and 13A provide sufficient documentary evidence to prove the point.

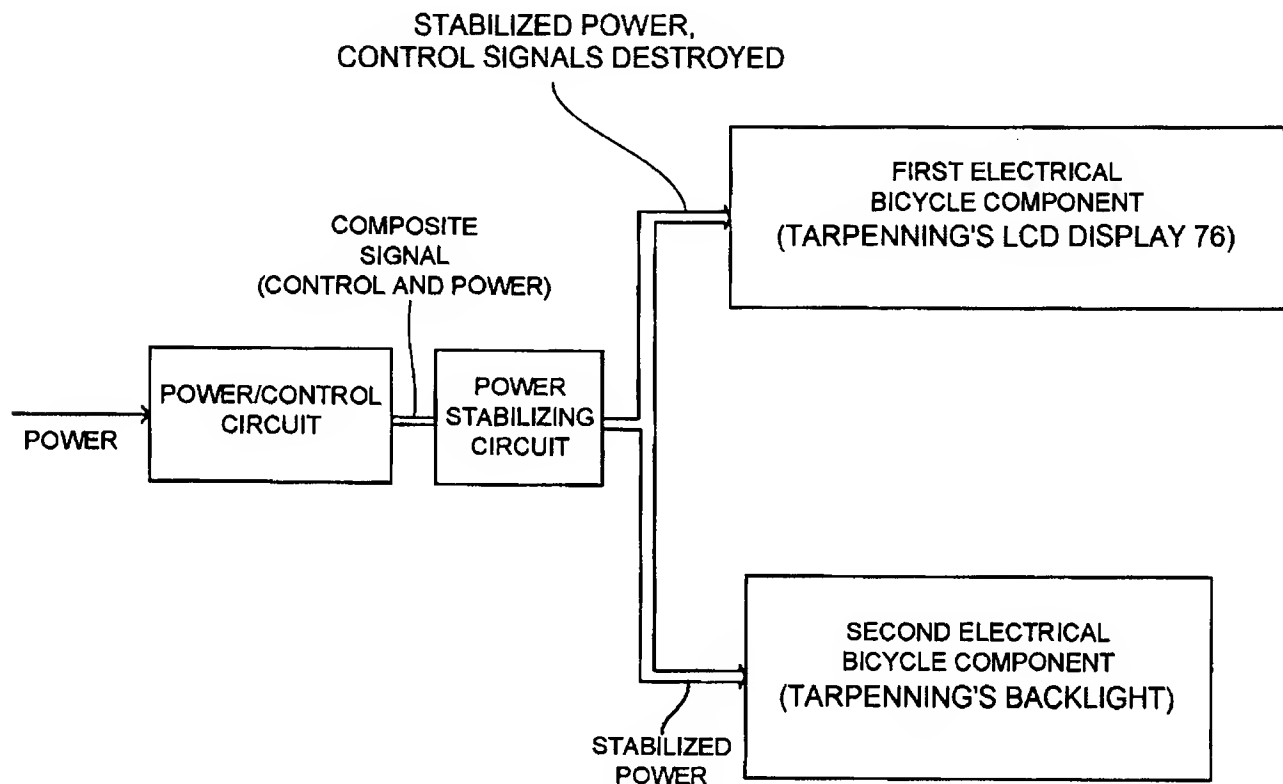
At page 9, lines 10-15, the Board stated that “Appellant has not factually established, with documentary evidence, that one of ordinary skill in the art would configure the combination of Spencer, et al, Tarpenning, the APA, and Schwaller, such that the controller 21 is connected to the display 31 using an increased number of wires. Arguments of counsel cannot take the place of factually supported objective evidence.” These statements were made in the portion of the Board’s Decision that addressed the issue of whether or not it would have been obvious to combine Spencer, et al with the APA to provide a composite signal to Spencer, et al’s shifter motor (29). Shifter motor (29) was interpreted to be the first electrical bicycle component recited in claim 28, whereas Spencer, et al’s display (31) is relevant to the second electrical bicycle component as discussed below. To be cautious, however, the Appellant wishes to emphasize that Appellant’s arguments directed to the addition of a CPU to Spencer, et al’s shifter motor (29) and the number of wires that potentially could be saved were explicitly referenced to Spencer, et al’s Figs. 10 and 13A, which provide detailed schematics of the components and how those components are wired together. Spencer, et al is the objective documentary evidence that supports Appellant’s factual arguments with respect to the addition of a CPU to Spencer, et al, the small number of wires that could be saved by the proposed combination and the additional cost and complexity involved.

## **II. Supplying a composite signal to a second electrical bicycle component**

### **A. Tarpenning’s LCD display (76) and backlight**

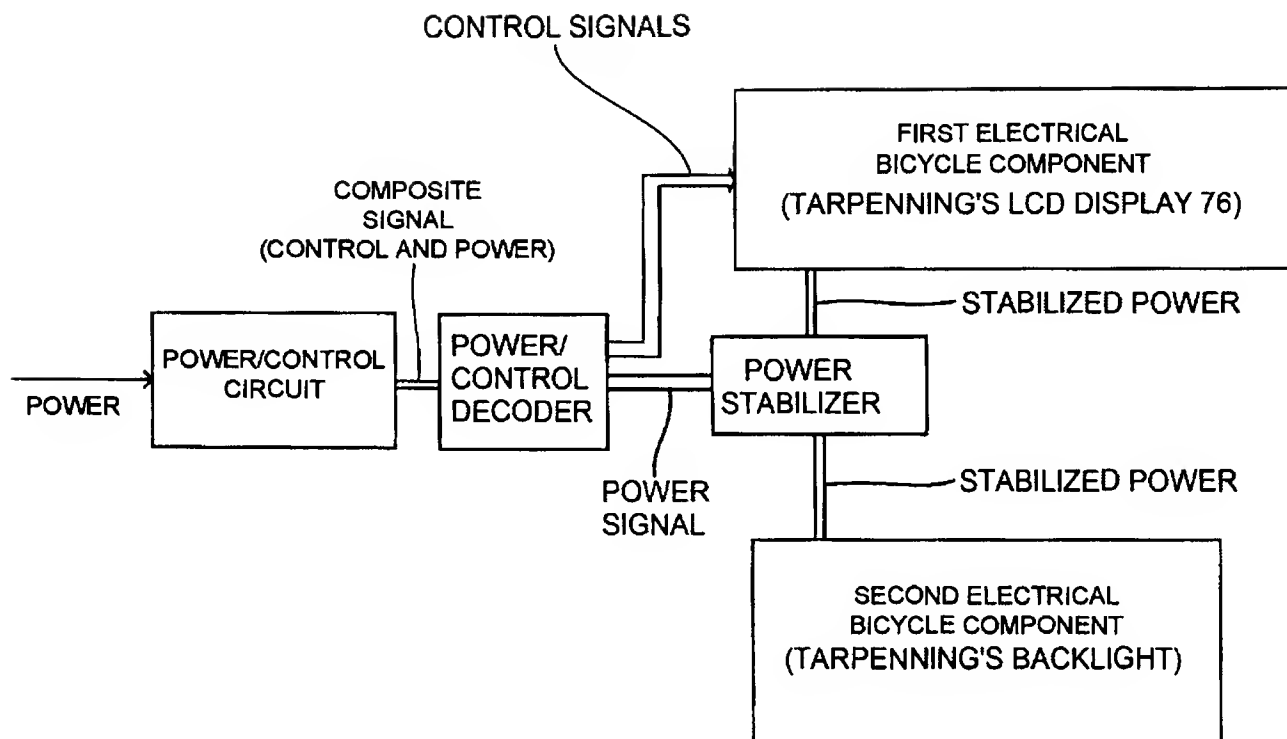
At page 10, lines 15-18 of the Board’s decision, the Board stated that “[c]ombining Spencer, et al and the APA with Tarpenning is no more than the simple substitution of Tarpenning’s known LCD display 76 with a backlight for Spencer, et al’s known display 31, with no unexpected results.” This statement apparently adopts the Examiner’s argument at Page 4, lines 10-13 of the Examiner’s Answer wherein the Examiner alleged that it would have been obvious to implement Tarpenning, et al’s LCD display with backlight into Spencer, et al’s invention as first (display) and second (backlight) electrical bicycle components so that a user could be able to read the display at night. Thus, the examiner apparently relied on Tarpenning’s LCD display 76 to provide an alternative interpretation of the first electrical bicycle component and the second electrical bicycle component recited in claim 28.

Tarpenning's display (76) and backlight are self-contained within a single hand-held computing device (30) (Fig. 2). If one merely substituted Tarpenning's LCD display (76) and backlight for Spencer, et al's display (31) and added Schwaller's power stabilizing circuit (1), then the system would be configured as follows:



In this configuration, the control signals would be destroyed and the LCD display (76) would be rendered inoperative.

At page 10, lines 18-21 of the Board's decision, the Board stated "because the backlight of Tarpenning's LCD display 76 receives only power, ... one of ordinary skill would recognize that the backlight would not require the APA's control signal component of the composite signal. This statement appears to imply the following system:



As noted at page 5, lines 23-24 of the Appeal Brief, Schwaller does not use composite signals anywhere, and certainly not as an input to Schwaller's switching controller (1). Thus, in this case, the second electrical bicycle component does not receive the composite signal.

Thus, even if one of ordinary skill would be motivated to provide a composite signal to Tarpenning's LCD display (76) (first electrical bicycle component), there is no reason to provide a *composite signal* to Tarpenning's *backlight* (second electrical bicycle component) such that a power stabilizing circuit intervenes and *receives the composite signal*, thereby providing stabilized power to the backlight. This argument was made at page 5, line 25 through page 6, line 4 of the Appeal Brief.

### **B. Saving wires**

The statement at page 9, lines 10-15 of the Board's Decision that "Appellant has not factually established, with documentary evidence, that one of ordinary skill in the art would configure the combination of Spencer, et al, Tarpenning, the APA, and Schwaller, such that the controller 21 is

connected to the display 31 using an increased number of wires” appears to have been intended by the Board to apply to this issue. The issue of saving wires in a system that employs Tarpenning’s LCD display (76) and backlight as first and second electrical bicycle components was raised by the system proposed by the examiner at page 8, lines 1-14 of the Examiner’s Answer. In the Appellant’s Reply Brief, in the last paragraph at page 1 through page 2, line 25, the Appellant showed how the actual physical system proposed by the examiner *increased* the number of wires that would be required if a CPU were added to Tarpenning’s LCD display (76) and if composite signals were used in the manner suggested by the examiner. The Appellant’s description of how wiring would be accomplished in such a system was based on and with reference to the level of wiring detail in Spencer, et al’s drawings, the level of wiring detail in Tarpenning’s drawings, and the level of wiring detail in Schwaller’s drawings. The drawings in those prior art patents provide the objective documentary evidence that show how the Appellant’s arguments are true.

There seems to be a pervasive misunderstanding of the scope of the APA. Paragraph [0003] of Appellant’s specification states that “[t]echnology for communicating power and control signals using integrated or composite signals has been developed to reduce the number of wires required between the various electrical components.” There seems to be the belief that the number of wires required between the electrical components inherently will be reduced for all systems regardless of the configuration of the components. However, it is submitted that the law of inherency applies to admitted prior art as well as to documentary prior art. According to the well-established law of inherency, the number or wires required between the various electrical components must *necessarily* be reduced in all electrical systems in order for the APA to be universally applied. Such a conclusion cannot be made without considering the electrical components in question. It is not sufficient that, as a general rule, the number of wires *may be* or even *probably are* reduced. There must be 100% certainty. *Rosco v. Mirror Lite*, 304 F.3d 1373, 1380; 64 USPQ2d 1676 (Fed.Cir. 2002). No such certainty exists for every system. The facts of the individual case must be considered, and the Appellant explained in detail how the actual system proposed by the examiner to meet the requirements of claim 28, using the very detailed wiring diagrams provided in the prior art relied on by the examiner, actually *increased* the number of wires required to service the system, even if composite signals were used.



**Claim 39**

At page 12, lines 25-26 of the Board's decision, the Board states that the reading from Spencer, et al's wheel speed sensor 23 (the "speed indicating signal") is transmitted to the controller 21 and to the shifter motor 29. That is not true. The signal from wheel speed sensor (23) is designated WHLSEN in Spencer, et al's Fig. 15. As shown in Fig. 10, the WHLSEN signal is provided to the PA0 input terminal at the upper right hand corner of microprocessor (101). As shown in Fig. 13A, the WHLSEN signal is not provided to shifter motor (29).

Furthermore, as noted above, the first electrical bicycle component and the second electrical bicycle component were interpreted by the Examiner to be Tarpenning's LCD display (76) and backlight, respectively, that were substituted for Spencer, et al's display (31). Spencer, et al's Figs. 10, 11 and 14 show the signals communicated from controller (21) to display (31), and none of those signals comprise the wheel speed sensor signal WHLSEN. The arguments presented at page 6 of the Appeal Brief for claim 39 and at page 3, lines 5-17 of the Reply Brief remain valid.

At page 13, lines 3-6 of the Board's Decision, the Board discounted Appellant's argument directed to the signals shown in Spencer, et al's Figs. 11 and 14 and stated that "Spencer teaches that the controller (21) receives signals from the wheel speed sensor." That may be true, but claim 39 requires the *second electrical bicycle component* to receive the composite signal that includes such speed indicating signals, and that would correspond to Spencer's display (31), not to Spencer, et al's controller (21).

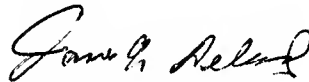
**Claim 40**

The misunderstanding set forth for claim 39 applies to claim 40 as well. At page 14, line 24 through page 15, line 1 and at page 15, lines 6-10 of the Board's decision, the Board states that Spencer, et al teaches that the shifter motor (29) receives a signal from the controller (21) based on readings from one of the many sensors, including the wheel speed sensor (23). As noted above, shifter motor (29) does not receive the WHLSEN signal from wheel speed sensor (23). Furthermore, as noted above, the first electrical bicycle component and the second electrical bicycle component were interpreted by the Examiner to be Tarpenning's LCD display (76) and backlight, respectively,

that were substituted for Spencer, et al's display (31). It may be true that Spencer, et al's controller (21) receives signals from the wheel speed sensor (23), but claim 40 requires the *second electrical bicycle component* to receive the composite signal that includes such speed indicating signals, and that would correspond to Spencer, et al's display (31), not to Spencer, et al's controller (21). As noted above, none of the signals communicated from controller (21) to display (31) comprise the wheel speed sensor signal WHLSEN. The arguments presented at page 6 of the Appeal Brief for claim 40 and at page 3, line 21 through page 4, line 9 of the Reply Brief remain valid.

Accordingly, it is requested that the Board reconsider the Board's holdings with respect to claims 28-48 and reverse the examiner's rejection of those claims

Respectfully submitted,



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